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STATISTICAL BULLETIN

METROPOLITAN LIFE INSURANCE COMPANY

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Health Aspects of the Draft

THE adoption by the American people of conscription as a national defense measure should have some distinct effects on both personal and public health. First of all, the period of military service should result in the improvement in physique of young men called into service. But also of import for the future health of our people are several other factors which are either incidental to Army life or which arise from preventive and sanitary procedures of Army medical practice. For these reasons, military service for the Nation's youth promises to be a constructive factor in the future of American public health. It is a matter of distinct public interest to know how these long-term benefits will accrue from conscription. On the other hand, there are definite and more or less immediate hazards which some of the young draftees will face, and of which the public should also be aware, because unless these hazards are known in advance and provided against, they may be a source of serious trouble.

It is to be regretted that there is little statistical measure of the improvement in physical condition of American young men during Army service. There are some scant data in studies made during the World War, based upon anthropometric measurements of the first million accepted draftees in 1917-1918 and of approximately 100,000 demobilized veterans in 1919. About the best and most trustworthy evidence of the improved condition of these men is the fact that there was an average increase of approximately one inch in chest circumference, a figure that is greater than would be accounted for by the increase in average weight and age during the period of service. Another good indication of physical betterment is that, although the average weight of draftees increased by 3.4 pounds during Army service, there was an appreciable decrease in the incidence of obesity. Thus the proportion of men weighing 190 to 199 pounds decreased from 7.9 to 7.2 per 1,000, and of those weighing more than 200 pounds, the proportion fell from 5.4 to 4.6 per 1,000. At the same time the incidence of underweight likewise decreased, for the proportion of men weighing less than 130 pounds dropped from 254.7 to 179.4 per

1,000. The extent to which military service contributed to this latter result, however, is uncertain, because many of the draftees were still within the age period in which an average annual gain in weight of 1 or 2 pounds is common.

It is reasonable to expect that appreciable improvement in general health and physique will be recorded among men called to military service in the next few years. Advances in knowledge of nutrition should be reflected in an improvement in the Army dietary. A large proportion of the new draftees will be better nourished than they were before their Army service, because they will have a diet that is adequate in all vital respects. Many draftees will also be experiencing for the first time an active life of physical work and exercise. In civilian life younger persons as well as older persons have become too dependent on machines. Because of the reduction in the amount of physical labor required in everyday work, many young people do not expend as much energy or use the large muscles of the body, either in work or in play, as much as is good for proper physical health and development. The active life of the Army, as well as the program of healthy recreation planned for the new Army, should be of considerable benefit to the draftees. Many of the men will be helped to form regular living habits because of the routines which they will experience as a necessary part of military life, and this should be of substantial, if indirect, benefit to their health.

A favorable health factor of quite another type is the medical care which these men will receive. Of direct benefit to them and indirectly to the general public will be extensive vaccination against smallpox. For those men who have not before been vaccinated, and particularly those who come from areas where it is not compulsory or where there is effective agitation against it, this routine procedure will educate many to its value, some of whom may later be advocates of vaccination in their home communities. In a measure, vaccination against typhoid fever will accomplish the same purpose. It is notable that after the World War the death rate from typhoid in this country dropped very sharply, and one of the factors in this trend was the large scale anti-typhoid inoculation of men in Army service during the War.

The medical examination of draftees will disclose many with various types of impairments which previously had been undiagnosed or untreated. The correction of defects will be of distinct value to the men, whether or not they are accepted for the Army.

The most serious hazard that the new draftees will face is from the communicable diseases. Armies in training are necessarily quartered in relatively circumscribed areas, with the result that conditions are favorable to the spread of diseases of this type. There is good reason to expect, however, a much better record in this respect than during

the World War. Our preparations today are not subject to the forced haste of 1917-1918. Housing provisions for soldiers will be more adequate now than they were at that time.

Outbreaks of the communicable diseases ordinarily characteristic of childhood may be expected, and in fact are quite unavoidable. Fortunately they will affect a relatively small proportion of the men, and specifically those who for one reason or another have not acquired immunity to them in childhood. This situation is in a sense normal in the Army, because in peace time these acute communicable diseases form a significant proportion of total Army hospital admissions for sickness, particularly among newly enlisted men. In 1917-1918 the diseases of this type which occurred most frequently were measles and mumps. Epidemics of cerebrospinal meningitis caused a mortality quite out of proportion to its incidence. The incidence of the "childhood" diseases tended to be highest in men from rural areas, more especially from the South. It is likely, however, that these diseases will be far less frequent in the modern camps than during the last war, because there should be fewer non-immunes among today's draftees. The two chief reasons for this decline in non-immunes are, first, a smaller proportion of young men live in country districts now as compared with 20 years ago and, second, the isolation of rural dwellers has much diminished during this period, largely as a result of the widespread use of the automobile.

The mortality from epidemic cerebrospinal meningitis in the new draft Army will definitely be much lower than that during 1917-1918, because some chemicals of the sulfonamide group have proved effective against the disease. The case fatality in cerebrospinal meningitis before chemotherapy was 25 percent to 50 percent even in well treated groups, but recent general experiences with chemotherapy show case fatality rates in this disease of about 15 percent. Some observers with small numbers of cases report even better results. Moreover, the case fatality in the age groups affected by the draft is lower than the figure at all ages.

So far as respiratory diseases are concerned, little can safely be predicted. But one great advantage that these young men today have, as compared with draftees of the World War, is that against pneumonia we now have new and powerful agents of cure. Moreover, influenza has been the subject of intensive research since the great pandemic, and only recently vaccines have been developed which bear promise of success against an epidemic of the disease, if it should occur. It is certain also that our Army medical officers will have learned many valuable lessons from our experience of 1917-1918 and will avoid mistakes that were made then.

Digestive diseases, which in the

past were responsible for a high proportion of disabling illnesses in all armies, should be much less frequent in the new drafted Army. Advances in methods of preservation and refrigeration of foods, as well as the improved dietary of the Army, should bring about this change for the better.

A health hazard which, as on previous occasions, demands serious attention, is venereal disease. But here, too, we may look forward to a better record among draftees who will now serve than among those of 1917-1918. Government leaders, including those in the military service, are fully awake to this danger and are bending every effort to meet it. Army officials are showing a very direct interest in the plans for recreational and social activities of the men to be called into service and, in fact, have taken over direct administration and control of these matters within the camps. It is, moreover, a matter of record that the incidence of venereal disease in the regular Army has shown a consistent and satisfactory decline. Various measures have brought this about, among which are instruction in sex hygiene for soldiers, compulsory prophylaxis and periodic inspection of soldiers and, most recently, greater responsibility of the commanding officers themselves for the control of the problem in their own units. The frank and objective attitude of Army authorities to the problem of venereal disease will not be lost on the draftees, and this itself should have permanent value to public health by giving to hundreds of thousands of young men some fundamental information about these diseases and their dangers, and promoting a sane viewpoint toward them.

It should be most assuring to both draftees and their families that the general health record of our Army has been at its best in recent years. The mortality from disease has fallen appreciably. During the five years 1933-1937 the average death rate from disease declined 10 percent from that of the preceding five-year period. The pneumonia death rate fell 13 percent in this interval and the tuberculosis rate nearly 35 percent.

In general, the American people can hope for substantial benefits in terms of health as a by-product of the training of the new draft Army. Other countries which have had peace-time conscription over a long period of years have unquestionably profited in terms of sturdier physique for the majority of their male populations. Peace-time conscription is a distinct departure from our traditions, but our people heartily endorse it in the present world crisis. It is good to know that the preparations under this emergency, aside from fulfilling their immediate purpose, will confer lasting benefits on the Nation. It is our great hope that these benefits may not be nullified by the crashing down upon us of those very evils which have engulfed the Old World and which the draft is designed to ward off from our country.

The Size of Families and the Birth Rate

In the early days of our Republic the average American family must have comprised about seven or eight children, according to estimates obtained by indirect methods from the meager statistical data available. Many families, of course, considerably exceeded the average. Today the average figure is about three. Corresponding to this great difference in size of families, the rate of natural increase—that is, the excess of the birth rate over the death rate—has fallen from about 31 per 1,000 in 1800 to about seven per 1,000 today.

There is evidently *some* relation between the average size of families and the birth rate. In a broad, general way it is clear that the prevalence of large families in a population will be associated with a high birth rate, and small families will accompany low birth rates. But the relation is not so simple as this, because two other factors enter—namely, the age distribution of the population and, in particular, the proportion of women of childbearing ages. These facts must be borne in mind in seeking an understanding of the trend of the birth rate and, therefore, of the natural population increase in the past, present, and future.

The situation is depicted diagrammatically in the chart on page 6. On the top step of the staircase diagram the silhouette illustrates the fact already noted, that about the year 1800 the average size of our families must have been about seven or eight children. The proportion of women in the main childbearing ages—say 20 to 49 years—was relatively low, namely, about 33 percent. This low percentage resulted mainly from the fact that, with such large families, the proportion of children in the population was large—58 percent—even despite the high mortality among them at that time. The proportion of women 50 years old and over was small, about 9 percent, because of the high mortality, which caused a large part of the persons born to drop out before reaching an advanced age.

The situation representative of current conditions, shown in the middle step of the staircase diagram, is widely different. Families have shrunk to an average of about three children, but the proportion of women of childbearing ages has increased to about 46 percent. It is the increase in this contingent that enables us today, despite our greatly reduced size of families, still to maintain a birth rate exceeding the death rate by about seven per 1,000.

The lowermost step in the chart represents a reasonable forecast of the conditions to be expected about the end of the current century. The family may be even a little smaller than today, but what is more important, the proportion of women in the childbearing ages will have shrunk very considerably—to about 39 percent, according to our estimate, as against the 46 percent

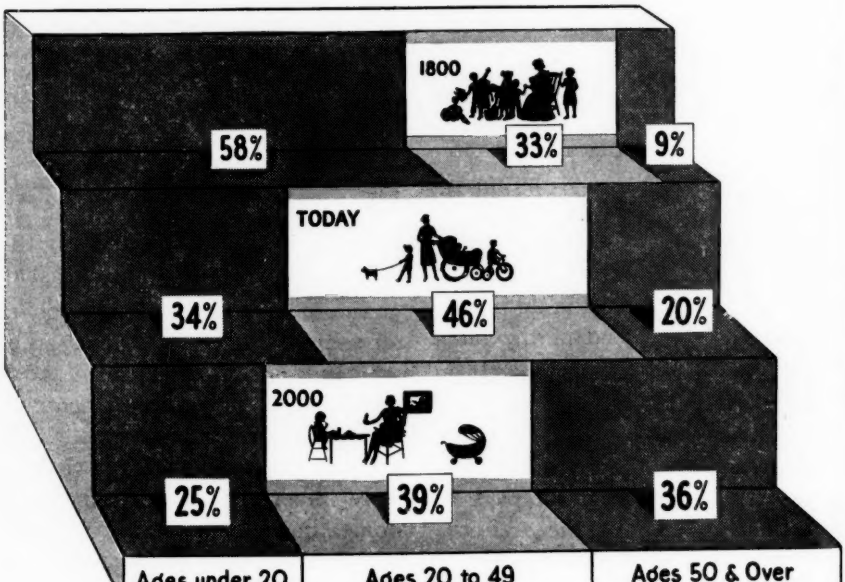
of today. This decrease in the proportion of women in the childbearing ages, along with families as small as today, or even smaller, will react very unfavorably on the birth rate, and, if present indications can be used as a guide, will result in a birth rate inadequate to maintain a stationary population against the death rate then prevailing.

While a forecast dated so far ahead is necessarily open to a considerable margin of uncertainty, so that the figures must be regarded rather as indicative than as precise, this at least is certain, that the general picture is correct. That is to say, there certainly is going to be a marked reduction in the proportion of persons between the ages of 20 to 49, and present indications do not point to any return to larger families.

It is true that the world at present is in such a state of upheaval that any forecast based on populations in a state of peace is offered with reserve. But the effect of war in the past has been to darken rather than brighten the picture of population growth, and he would be an optimist indeed who, in world conditions of today, could see any promise of betterment in the growth

PROPORTION OF AMERICAN WOMEN IN THREE AGE GROUPS AND AT THREE EPOCHS - PAST, PRESENT AND FUTURE

THE WIDTH OF THE WHITE PANELS INDICATES THE PROPORTION OF WOMEN IN CHILDBEARING AGES THE SILHOUETTES SHOW THE AVERAGE SIZE OF FAMILIES



Metropolitan Life Insurance Company

of civilized nations. International population studies have been very active in recent years, and have formed one of the topics followed somewhat carefully in the STATISTICAL BULLETIN. Undoubtedly in coming years, in the light of present world conditions, an entirely new chapter will be written in this field of demography.

Mortality Experience of the First Nine Months of 1940

WHILE it is not likely that the full year 1940 will establish a new record for low mortality among the millions of wage-earners and their dependents who are Industrial policyholders of the Metropolitan Life Insurance Company, the year, in all probability, will register a death rate approximately the same as the previous minimum. This, at least, is the picture drawn from the experience of this large cross-section of the population of the United States and Canada for the first nine months of the current year, when the death rate was 7.8 per 1,000. The same rate was in evidence during the like part of 1939, and the only lower figure was registered in 1938, namely 7.7 per 1,000.

The 1940 mortality figures for the general population of the United States are not as favorable as are those for the insured. For example, for the 41-week period ended October 12th, deaths in 90 major cities rose 2.2 percent as compared with the same period of 1939. Again, such fragmentary data as are available from the mortality reports of a few States also indicate that there has been a slight rise in the death rate as compared with last year. Even so, it can still be said that health conditions in 1940, to date, have been excellent and that, barring unfavorable developments in the closing weeks, the mortality rate in the general population will be close to the lowest ever registered.

It is encouraging to find that for eight individual diseases new minimum rates in 1940 are already assured for the Industrial policyholders. These diseases are measles, scarlet fever, whooping cough, diphtheria, pneumonia, diarrheal conditions, appendicitis, and diseases arising out of pregnancy and childbirth. The record for deaths due to violence is also excellent. The homicide death rate has dropped 14.0 percent from its previous low, recorded only a year ago, and suicides have occurred this year at a lower rate than for any year since 1928. There has been a negligible increase since last year in accidents (all forms), and negligible decreases in fatal accidents in the home and automobile fatalities. Among all these favorable health developments the most striking is the decline, in a single year, of 18 percent in the mortality rate for pneumonia.

At this writing there is still a fair prospect that 1940 may be added to the long series of years which

have witnessed continuous declines in the mortality from tuberculosis. It is of interest to note that such improvement as has occurred is among the colored people. Up to the year 1940 the year-to-year de-

Number of Deaths and Death Rates per 100,000 Persons Exposed. First Nine Months of 1940 and 1939 Compared. By Color for Selected Causes. All Ages. Metropolitan Life Insurance Company, Industrial Department Weekly Premium-Paying Business*

Causes of Death	Death Rates per 100,000 Persons Exposed*					
	Total		White		Colored	
	Jan.-Sept. 1940	Jan.-Sept. 1939	Jan.-Sept. 1940	Jan.-Sept. 1939	Jan.-Sept. 1940	Jan.-Sept. 1939
All Causes—Total	775.0	777.2	709.6	712.3	1,263.1	1,271.9
Typhoid fever	.7	.7	.6	.6	1.0	1.7
Communicable diseases of childhood	3.0	4.4	3.2	4.5	1.5	3.7
Measles	.4	.7	.5	.8	.....	.3
Scarlet fever	.6	.8	.6	.8	.3	.7
Whooping cough	1.3	1.8	1.3	1.7	.7	2.1
Diphtheria	.8	1.1	.8	1.2	.5	.7
Influenza and pneumonia	46.8	57.7	39.9	51.4	98.8	105.3
Influenza	8.7	11.1	6.7	9.4	23.1	23.5
Pneumonia (all forms)	38.2	46.6	33.1	42.0	75.7	81.8
Bronchopneumonia	16.1	19.5	14.7	18.5	26.3	27.3
Lobar and undefined	22.1	27.1	18.5	23.5	49.4	54.5
Tuberculosis (all forms)	45.3	45.9	34.0	33.8	129.8	137.6
Tuberculosis of respiratory system	40.9	41.2	30.7	30.5	116.9	123.0
Syphilis	11.7	11.1†	7.1	6.4†	46.1	47.4†
Cancer (all forms)	102.7	100.3	101.4	99.3	112.9	107.5
Diabetes mellitus	29.3	28.0	29.0	27.8	32.1	29.6
Alcoholism	1.2	1.2	1.1	1.1	1.9	1.7
Cerebral hemorrhage	61.5	60.1	54.1	52.6	116.8	117.3
Diseases of the coronary arteries	49.2	39.5	50.4	40.5	40.1	32.2
Angina pectoris	3.0	6.4	3.1	6.5	2.6	5.0
Diseases of the heart (other forms)‡	161.0	162.0	148.7	149.2	252.8	260.0
Diarrhea and enteritis	4.4	5.5	4.3	5.3	5.0	7.1
Appendicitis	9.3	10.4	9.2	10.0	10.3	13.8
Chronic nephritis	57.2	52.0	47.2	44.4	132.1	109.6
Puerperal State—total	4.9	5.6	4.1	4.8	10.2	11.2
Total external causes	58.7	59.1	56.2	56.1	77.2	82.3
Suicides	8.4	8.6	8.8	9.0	5.1	5.6
Homicides	3.7	4.3	1.7	1.9	18.4	23.0
Accidents—total	46.7	46.2	45.7	45.2	53.8	53.7
Home accidents	11.7	11.8	11.4	11.5	14.2	14.4
Motor vehicle accidents	16.9	17.1	16.6	17.0	18.9	18.0
Automobile accidents§	15.8	16.1	15.5	15.9	18.3	17.3
All other causes of death	125.1	127.4	116.2	118.0	191.9	199.1

*The rates for 1940 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

†Excludes aneurysm of the aorta.

‡Excludes pericarditis, acute endocarditis, and acute myocarditis.

§Excludes collisions between automobiles and railroad trains or streetcars.

creases among all the Industrial policyholders had been sizable, whereas so far this year the drop has been negligible: from 45.9 per 100,000 for the January-September period of 1939 to 45.3 for the like part of 1940. It is our firm belief, however, that further sizable declines in deaths from this disease are coming.

Higher death rates this year than last are in evidence for cancer, diabetes, and the cardiovascular-renal diseases, and new highs will be recorded for 1940 for all these and especially for coronary artery conditions. Deaths from these diseases are concentrated in later life, and the gradual rise in recent years is due, in part, to the increase in the ratio of Industrial policyholders in the older age ranges.

For cancer and diabetes, moreover, the increase in the recorded mortality rate results, in some measure, from the intensive case finding that is a part of the organized campaigns against these diseases. Thus, the number of deaths from these conditions is swelled by cases that formerly were missed and, therefore, charged to other diseases. There is good evidence of the effectiveness of the campaigns against cancer and diabetes in the better longevity of persons with these diseases. Authenticated cases of "five-year cures" of cancer are rapidly mounting, while the carefully collected and analyzed statistics of the George F. Baker Clinic show an appreciable fall in the mortality *among* diabetics, with a corresponding rise in their length of life after onset of the disease. The outlook for the patient with cancer and more especially for the patient with diabetes is steadily improving. While the mortality statistics of these diseases leave no doubt as to the seriously high and increasing level of their incidence, the results of treatment, based upon clinical studies, should assure us of the effectiveness of the persistent work being pursued on several fronts against cancer and diabetes.

All in all, the current state of the public health, both in the wage-earning population and among the people at large, is very satisfactory. The first nine months of 1940 have been free from major outbreaks of the controllable diseases. The generally favorable trend of those conditions which lend themselves to the intervention of the health officer and the modern practising physician has continued this year—even if the improvement in the mortality from some of them has not been as marked as last year.

With respect to fatal accidents the record of the insured wage-earners is more favorable than that of the population at large, as is shown by preliminary reports of the National Safety Council for the first seven months of the year. These show that accidental deaths, all types combined, have increased 7 percent as compared with the like part of 1939, and that there have been increases of 14 percent and 8 percent in occupational fatalities and home accidents, respectively, while motor vehicle accidents are up 5 percent.

Health Record for September 1940

SEPTEMBER, which in most years registers either the very lowest or next to the lowest death rate of all the months, has run true to form so far in 1940. Furthermore, its mortality rate this year (684 per 100,000) was at almost the lowest level ever recorded for any September among the Metropolitan's many millions of Industrial policyholders. Only in 1938 and 1939, when the rates were 677 and 667 per 100,000 respectively, was the figure for September more favorable than in 1940.

Comparison of the death rates for September with those for August 1940, for the more important causes of death, show declines for pneumonia, tuberculosis, syphilis, diabetes, all of the principal cardiovascular-renal diseases, appendicitis, accidents (all forms), and home accidents. Cancer and motor vehicle accidents were the only important causes to register higher rates than in August.

The health record of the general population of the United States remained excellent during September. Reports of the prevalence of controllable diseases show that the incidence of smallpox was less than that reported in either August of the current year or in September a year ago. The usual seasonal rises were noted for diphtheria, scarlet fever, and typhoid fever, but in each instance the cases reported were fewer than in September 1939. There was less sickness from measles and whooping cough than in August, but the number of cases of each of these diseases were somewhat in excess of those reported in September of last year. The only diseases which showed higher prevalence in September than in either August of this year or in September of last year were influenza and poliomyelitis.

The number of cases of poliomyelitis reported by 47 States and the District of Columbia was the highest of any one month for several years past, amounting to 3,062, as against 1,893 in August. Nearly every State in the Union suffered from the disease; only New Hampshire, Delaware, and Arizona escaped entirely. The disease was mostly concentrated in the North Central States. It was especially prevalent in Michigan, Iowa, West Virginia, Indiana, Illinois, Ohio, and Kansas.

Among the items of special public health interest recently reported are the following: A study of the rehabilitation of the tuberculous has been undertaken by the New York Tuberculosis and Health Association, the Brooklyn Tuberculosis and Health Association, and the Queensboro Tuberculosis and Health Association, in cooperation with the New York State Board of Vocational Education. The purpose of the study is to determine the needs of persons handicapped by pulmonary tuberculosis and to provide for vocational guidance and advice, as well as employment.

The following table shows the mortality among Industrial policyholders for September 1940, August 1940, and September 1939, together with the death rates for the first nine months of each year.

METROPOLITAN LIFE INSURANCE COMPANY

Death Rates per 100,000 Policyholders from Selected Causes. Industrial Department. Weekly Premium-Paying Business*

Causes of Death	Annual Rate per 100,000 Policyholders*				
	September 1940	August 1940	September 1939	Year to Date: End of September 1940	Year to Date: End of September 1939
All Causes—Total	684.1	736.6	667.3	775.0	777.2
Typhoid fever	1.1	1.3	1.4	.7	.7
Measles	....	.6	.1	.4	.7
Scarlet fever	.2	.3	.1	.6	.8
Whooping cough	1.2	1.0	2.0	1.3	1.8
Diphtheria	.6	.8	1.2	.8	1.1
Influenza	2.1	2.0	1.5	8.7	11.1
Pneumonia (all forms)	17.9	21.1	18.3	38.2	46.6
Tuberculosis (all forms)	40.1	41.9	42.1	45.3	45.9
Tuberculosis of respiratory system	36.0	37.8	38.0	40.9	41.2
Syphilis	9.1	10.6	9.1†	11.7	11.1†
Cancer (all forms)	101.2	98.5	94.5	102.7	100.3
Diabetes mellitus	24.2	25.6	24.3	29.3	28.0
Cerebral hemorrhage	53.3	59.9	51.9	61.5	60.1
Diseases of the coronary arteries	43.9	44.2	37.1	49.2	39.5
Angina pectoris	2.3	1.7	4.9	3.0	6.4
Diseases of the heart (other forms)‡	134.9	142.6	128.5	161.0	162.0
Diarrhea and enteritis	6.2	5.3	8.2	4.4	5.5
Appendicitis	9.2	10.1	11.3	9.3	10.5
Chronic nephritis	47.7	49.7	43.7	57.2	52.0
Puerperal state—total	4.5	5.9	4.4	4.9	5.6
Suicides	8.1	7.8	7.8	8.4	8.6
Homicides	4.2	5.1	3.9	3.7	4.3
Accidents—total	49.9	62.1	51.9	46.7	46.2
Home accidents	8.1	9.6	9.9	11.7	11.8
Motor vehicle accidents	20.4	18.6	20.7	16.9	17.1
Automobile accidents§	19.5	16.9	19.0	15.8	16.1
All other causes of death	122.1	138.5	119.1	126.4	128.6

*The rates for 1940 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

†Excludes aneurysm of the aorta.

‡Excludes pericarditis, acute endocarditis, and acute myocarditis.

§Excludes collisions between automobiles and railroad trains or streetcars.

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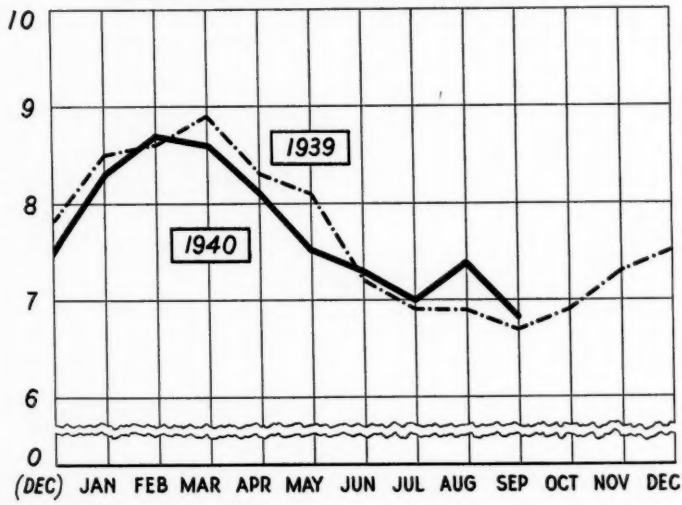
MORTALITY FROM ALL CAUSES

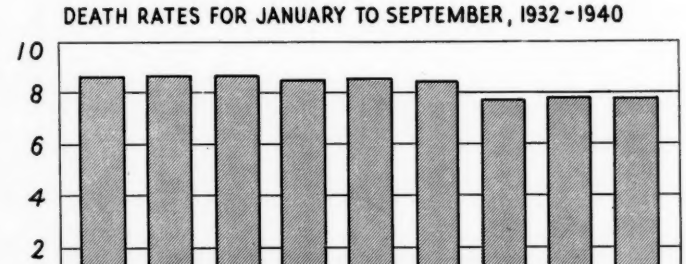
METROPOLITAN LIFE INSURANCE COMPANY
DEATH RATES PER 1,000 POLICYHOLDERS - ANNUAL BASIS
INDUSTRIAL DEPARTMENT - WEEKLY PREMIUM-PAYING BUSINESS

DEATH RATES BY MONTHS: 1939 AND 1940



(DEC)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1939	8.5	8.6	8.9	8.3	8.1	7.2	6.9	6.9	6.7	6.9	7.3	7.5
1940	8.3	8.7	8.6	8.1	7.5	7.3	7.0	7.4	6.8			

DEATH RATES FOR JANUARY TO SEPTEMBER, 1932 - 1940



Rates for 1940 are provisional.

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